

We claim:

1. A system for transporting a cryogenic fluid between a floating vessel and a second location, comprising:
 - a) a first cryogenic riser having a first end and a second end, said first riser adapted to allow the vertical position of said first end of said first riser to be changed, said second end of said first riser located in a body of water and in fluid communication with said second location, at least a portion of said first riser being insulated; and
 - b) a first submersible turret connector connected to said first end of said first riser, said first connector adapted for releasably connecting to a first floating vessel located on said body of water so that a cryogenic fluid can be communicated between said first vessel and said first end of said first riser, said first connector being moored to the bottom of said body of water such that the vertical position of said first connector can be changed, and said first connector adapted to allow said first vessel to rotate around said first connector upon the surface of said body of water while said first vessel is connected to said first connector.
2. The system of claim 1, further including a pipeline cryogenic fluid conduit having a first end and a second end, said first end of said pipeline conduit in fluid communication with said second end of said first riser, said second end of said pipeline conduit in fluid communication with said second location, and said pipeline conduit at least partially submerged within said body of water.
3. The system of claim 2, wherein at least a portion of said pipeline conduit is insulated.
4. The system of claim 3, wherein said first riser includes a first riser fluid conduit and a second riser fluid conduit, a first end of said first riser conduit and a first end of said second riser conduit attached to said first connector and a second end of said first riser conduit and a second

end of said second riser conduit in fluid communication with said pipeline conduit.

5. The system of claim 4, further including a jumper fluid conduit, said jumper conduit providing a path for fluid communication between said first riser conduit and said second riser conduit.
6. The system of claim 5, wherein said jumper fluid conduit is located in said first connector or between said first and second riser conduits.
7. The system of claim 5, wherein said pipeline conduit is comprised of a first pipeline fluid conduit and a second pipeline fluid conduit, a first end of said first pipeline conduit in fluid communication with said second end of said first riser conduit, a first end of said second pipeline conduit in fluid communication with said second end of said second riser conduit, a second end of said first pipeline conduit and a second end of said second pipeline conduit in fluid communication with said second location, thereby together with said jumper fluid conduit providing a fluid conduit loop suitable for circulation of a cryogenic fluid.
8. The system of claim 7, wherein said jumper fluid conduit is located in between said first and second pipeline conduits.
9. The system of claim 7, wherein said fluid conduit loop is adapted to circulate a cryogenic fluid from said second location, through said first and second pipeline conduits, said first and second riser conduits and said jumper conduit back to said second location while said first vessel is disconnected from said first connector.
10. The system of claim 2, further including a circulatory cryogenic fluid conduit, said circulatory fluid conduit having a first end connected to said first connector and in fluid communication with said first end of said first riser and second end in fluid communication with a point on said pipeline conduit, thereby providing a fluid conduit loop suitable for circulation of a cryogenic fluid.

11. The system of claim 2, wherein said first riser is adapted to changing the vertical distance between said first end and said second end of said first riser.
12. The system of claim 11, wherein said first riser is a flexible riser.
13. The system of claim 12, wherein said first riser includes one or more of a hose, rigid pipe, flexible pipe or articulating joints.
14. The system of claim 2, wherein said first connector is adapted for connecting to said first vessel at a point below the surface of said body of water.
15. The system of claim 2, wherein said first connector is adapted for connecting to said first vessel at a point above the surface of said body of water.
16. The system of claim 2, wherein said second location includes a facility.
17. The system of claim 16, wherein said facility is a second floating vessel located on said body of water.
18. The system of claim 16, wherein said facility is a land-based structure.
19. The system of claim 17, further including a second submersible turret connector, said second connector adapted for connecting to said second vessel so that a fluid can be communicated between said first vessel and said second vessel and said second connector adapted to allow said second vessel to rotate around said second connector upon the surface of said body of water while said second vessel is connected to said second connector.
20. The system of claim 19, wherein said second connector is adapted for releasably connecting to said second vessel.
21. The system of claim 20, wherein said second connector is moored to the bottom of said body of water so that the vertical position of said second connector can be changed.

22. The system of claim 3 wherein said first riser, said pipeline conduit, or both are insulated with a material having a thermal conductivity less than $1.0 \text{ W/m-}^{\circ}\text{C}$ ($0.6 \text{ Btu/hr-ft-}^{\circ}\text{F}$).
23. The system of claim 4, wherein said second end of said first riser conduit and said second end of said second riser conduit is connected to said first end of said pipeline conduit at a manifold.
24. The system of claim 2, wherein at least a portion of said pipeline conduit is located on or below the bottom of said body of water.
25. The system of claim 2, wherein said pipeline conduit is suspended within said body of water.
26. The system of claim 23, wherein said manifold includes shut-off valves.
27. The system of claim 2, wherein said pipeline conduit includes a splitter manifold, said splitter manifold having an inlet connected to a point on said pipeline conduit, a first outlet in fluid communication with said first connector, and a second outlet in fluid communication with an alternative submersible turret connector suitable for releasably connecting to a floating vessel located on said body of water.
28. The system of claim 1, further including a messenger buoy connected to said first connector.
29. The system of claim 1, wherein the vertical position of said first connector can be changed from a first position located within 20 meters of the surface of the body of water and a second position greater than 20 meters below the surface of the body of water.
30. The system of claim 1, wherein said first vessel is located greater than 1 kilometer from said second location.
31. The system of claim 1, wherein said first connector is a submerged turret loading connector or a submerged turret production connector.
32. The system of claim 1, wherein said first connector includes a plurality of fluid conduits.

33. The system of claim 32, wherein said first riser is comprised of a plurality of cryogenic fluid conduits.
34. The system of claim 1, wherein said first floating vessel is a floating cryogenic fluid storage vessel.
35. The system of claim 34, wherein said first floating vessel is a floating carrier vessel.
36. The system of claim 2, wherein said first riser, said first connector and said pipeline conduit are adapted to transfer cryogenic fluids having a temperature below -50°C (-58°F).
37. The system of claim 36, wherein said first riser, said first connector and said pipeline conduit are adapted to transfer cryogenic fluids having a temperature below -100°C (-148°F).
38. A system for transporting a cryogenic fluid between a floating vessel and a second location, comprising:
 - a) a first cryogenic riser having a first end and a second end, said first riser adapted to allow the vertical position of said first end of said first riser to be changed, said second end of said first riser located in a body of water and in fluid communication with said second location;
 - b) a first submersible turret connector connected to said first end of said first riser, said first connector adapted for releasably connecting to a first floating vessel located on said body of water so that a cryogenic fluid can be communicated between said first vessel and said first end of said first riser, said first connector being moored to the bottom of said body of water such that the vertical position of said first connector can be changed, and said first connector adapted to allow said first vessel to rotate around said first connector upon the surface of said body of water while said first vessel is connected to said first connector; and

c) a pipeline cryogenic fluid conduit having a first end and a second end, said first end of said pipeline conduit in fluid communication with said second end of said first riser, said second end of said pipeline conduit in fluid communication with said second location, said pipeline conduit at least partially submerged within said body of water;

wherein at least a portion of said first riser, at least a portion of said pipeline conduit, or both are insulated.

39. The system of claim 38, wherein said first riser includes a first riser fluid conduit and a second riser fluid conduit, a first end of said first riser conduit and a first end of said second riser conduit attached to said first connector and a second end of said first riser conduit and a second end of said second riser conduit in fluid communication with said pipeline conduit.
40. The system of claim 39, further including a jumper fluid conduit, said jumper conduit providing a path for fluid communication between said first riser conduit and said second riser conduit.
41. The system of claim 40, wherein said jumper fluid conduit is located in said first connector or between said first and second riser conduits.
42. The system of claim 40, wherein said pipeline conduit is comprised of a first pipeline fluid conduit and a second pipeline fluid conduit, a first end of said first pipeline conduit in fluid communication with said second end of said first riser conduit, a first end of said second pipeline conduit in fluid communication with said second end of said second riser conduit, a second end of said first pipeline conduit and a second end of said second pipeline conduit in fluid communication with said second location, thereby together with said jumper fluid conduit providing a fluid conduit loop suitable for circulation of a cryogenic fluid.
43. The system of claim 42, wherein said jumper fluid conduit is located in between said first and second pipeline conduits.

44. The system of claim 42, wherein said fluid conduit loop is adapted to circulate a cryogenic fluid from said second location, through said first and second pipeline conduits, said first and second riser conduits and said jumper conduit back to said second location while said first vessel is disconnected from said first connector.
45. The system of claim 42, wherein said first riser is adapted to changing the vertical distance between said first end and said second end of said first riser.
46. The system of claim 45, wherein said first connector includes a plurality of fluid conduits.
47. The system of claim 46, wherein said first riser is comprised of a plurality of cryogenic fluid conduits.
48. A method of transporting a cryogenic fluid between a floating vessel and a second location, comprising:
 - a) communicating a cryogenic liquid through a cryogenic fluid transfer conduit between a first vessel and a second location, said cryogenic fluid conduit comprising:
 - i) a first cryogenic riser having a first end and a second end, said first riser adapted to allow the vertical position of said first end of said first riser to be changed, said second end of said first riser located in a body of water and in fluid communication with said second location, at least a portion of said first riser being insulated; and
 - ii) a first submersible turret connector connected to said first end of said first riser, said first connector adapted for releasably connecting to said first vessel located on said body of water so that said cryogenic fluid can be communicated between said first vessel and said first end of said first riser, said first connector being moored to the bottom of said body of water such that the vertical position of said first connector can be changed, and said first

connector adapted to allow said first vessel to rotate around said first connector upon the surface of said body of water while said first vessel is connected to said first connector.

49. The method of claim 37, wherein said transfer conduit includes a pipeline cryogenic fluid conduit having a first end and a second end, said first end of said pipeline conduit in fluid communication with said second end of said first riser, said second end of said pipeline conduit in fluid communication with said second location, and said pipeline conduit at least partially submerged within said body of water.
50. The method of claim 49, wherein at least a portion of said pipeline conduit is insulated.
51. The method of claim 50, wherein said first riser includes a first riser fluid conduit and a second riser fluid conduit, a first end of said first riser conduit and a first end of said second riser conduit attached to said first connector and a second end of said first riser conduit and a second end of said second riser conduit in fluid communication with said pipeline conduit.
52. The method of claim 51, wherein said transfer conduit further includes a jumper fluid conduit, said jumper conduit providing a path for fluid communication between said first riser conduit and said second riser conduit.
53. The method of claim 52, wherein said jumper fluid conduit is located in said first connector or between said first and second riser conduits.
54. The method of claim 52, wherein said pipeline conduit is comprised of a first pipeline fluid conduit and a second pipeline fluid conduit, a first end of said first pipeline conduit in fluid communication with said second end of said first riser conduit, a first end of said second pipeline conduit in fluid communication with said second end of said second riser conduit, a second end of said first pipeline conduit and a second end of said second pipeline conduit in fluid communication with said

second location, thereby together with said jumper fluid conduit providing a fluid conduit loop suitable for circulation of a cryogenic fluid.

55. The method of claim 54, wherein said jumper fluid conduit is located in between said first and second pipeline conduits.
56. The method of claim 54, wherein said fluid conduit loop is adapted to circulate a cryogenic fluid from said second location, through said first and second pipeline conduits, said first and second riser conduits and said jumper conduit back to said second location while said first vessel is disconnected from said first connector.
57. The system of claim 49, wherein said transfer conduit further includes a circulatory cryogenic fluid conduit, said circulatory fluid conduit having a first end connected to said first connector and in fluid communication with said first end of said first riser and second end in fluid communication with a point on said pipeline conduit, thereby providing a fluid conduit loop suitable for circulation of a cryogenic fluid.
58. The method of claim 49, wherein said first riser is adapted to changing the vertical distance between said first end and said second end of said first riser.
59. The method of claim 58, wherein said first riser is a flexible riser.
60. The method of claim 59, wherein said first riser includes one or more of a hose, rigid pipe, flexible pipe or articulating joints.
61. The method of claim 49, wherein said first connector is adapted for connecting to said first vessel at a point below the surface of said body of water.
62. The method of claim 49, wherein said first connector is adapted for connecting to said first vessel at a point above the surface of said body of water.
63. The method of claim 49, wherein said second location includes a facility.

64. The method of claim 63, wherein said facility is a second floating vessel located on said body of water.
65. The method of claim 63, wherein said facility is a land-based structure.
66. The method of claim 63, wherein at least a portion of said pipeline conduit is located on or below the bottom of said body of water.
67. The method of claim 63, wherein said pipeline conduit is suspended within said body of water.
68. The method of claim 49, wherein the vertical position of said first connector can be changed from a first position located within 20 meters of the surface of the body of water and a second position greater than 20 meters below the surface of the body of water.
69. The method of claim 49, wherein said first vessel is located greater than 1 kilometer from said second location.
70. The method of claim 49, wherein said first connector includes a plurality of fluid conduits.
71. The method of claim 49, wherein said first riser further is comprised of a plurality of cryogenic fluid conduits.
72. The method of claim 49, wherein said first floating vessel is a floating cryogenic fluid storage vessel.
73. The method of claim 72, wherein said first floating vessel is a floating carrier vessel.
74. The method of claim 49, wherein said cryogenic fluid includes greater than 50 weight percent methane.
75. The method of claim 74, wherein said cryogenic fluid has a temperature below -50 °C (-58 °F).
76. The method of claim 75, wherein said cryogenic fluid has a temperature below -100 °C (-148 °F).

77. The method of claim 74, further comprising transporting said cryogenic fluid to land.
78. The method of claim 74, further comprising vaporizing at least a portion of said cryogenic fluid to produce a gas comprising greater than 50 weight percent methane.
79. The method of claim 78, further comprising transporting said gas to land.
80. A method of transporting a cryogenic fluid between a floating vessel and a second location, comprising:
 - a) communicating a cryogenic liquid through a cryogenic fluid transfer conduit between a first vessel and a second location, said cryogenic fluid conduit comprising:
 - i) a first cryogenic riser having a first end and a second end, said first riser adapted to allow the vertical position of said first end of said first riser to be changed, said second end of said first riser located in a body of water and in fluid communication with said second location;
 - ii) a first submersible turret connector connected to said first end of said first riser, said first connector adapted for releasably connecting to said first vessel located on said body of water so that said cryogenic fluid can be communicated between said first vessel and said first end of said first riser, said first connector being moored to the bottom of said body of water such that the vertical position of said first connector can be changed, and said first connector adapted to allow said first vessel to rotate around said first connector upon the surface of said body of water while said first vessel is connected to said first connector; and
 - iii) a pipeline cryogenic fluid conduit having a first end and a second end, said first end of said pipeline conduit in fluid communication with said second end of said first riser, said second

end of said pipeline conduit in fluid communication with said second location, said pipeline conduit at least partially submerged within said body of water;

wherein at least a portion of said first riser, at least a portion of said pipeline conduit, or both are insulated.

81. The method of claim 80, wherein said first riser includes a first riser fluid conduit and a second riser fluid conduit, a first end of said first riser conduit and a first end of said second riser conduit attached to said first connector and a second end of said first riser conduit and a second end of said second riser conduit in fluid communication with said pipeline conduit.
82. The method of claim 81, wherein said transfer conduit further includes a jumper fluid conduit, said jumper conduit providing a path for fluid communication between said first riser conduit and said second riser conduit.
83. The method of claim 82, wherein said jumper fluid conduit is located in said first connector or between said first and second riser conduits.
84. The method of claim 82, wherein said pipeline conduit is comprised of a first pipeline fluid conduit and a second pipeline fluid conduit, a first end of said first pipeline conduit in fluid communication with said second end of said first riser conduit, a first end of said second pipeline conduit in fluid communication with said second end of said second riser conduit, a second end of said first pipeline conduit and a second end of said second pipeline conduit in fluid communication with said second location, thereby together with said jumper fluid conduit providing a fluid conduit loop suitable for circulation of a cryogenic fluid.
85. The method of claim 84, wherein said jumper fluid conduit is located in between said first and second pipeline conduits.
86. The method of claim 84, wherein said fluid conduit loop is adapted to circulate a cryogenic fluid from said second location, through said first

and second pipeline conduits, said first and second riser conduits and said jumper conduit back to said second location while said first vessel is disconnected from said first connector.

87. The system of claim 80, wherein said transfer conduit further includes a circulatory cryogenic fluid conduit, said circulatory fluid conduit having a first end connected to said first connector and in fluid communication with said first end of said first riser and second end in fluid communication with a point on said pipeline conduit, thereby providing a fluid conduit loop suitable for circulation of a cryogenic fluid.
88. The method of claim 80, wherein said first riser is adapted to changing the vertical distance between said first end and said second end of said first riser.
89. The method of claim 80, wherein said first riser is a flexible riser.
90. A method of transporting a cryogenic fluid between a first location and a floating vessel located on a body of water, comprising:
 - a) connecting a first floating vessel to a first submersible turret connector, said first connector adapted for releasably connecting to said first floating vessel so that a cryogenic fluid can be communicated between said first floating vessel and said first connector, said first connector being moored to the bottom of said body of water such that the vertical position of said first connector can be changed, and said first connector adapted to allow said first floating vessel to rotate around said first connector upon the surface of said body of water while said first floating vessel is connected to said first connector;
 - b) communicating a cryogenic fluid between said first floating vessel and said first connector;
 - c) communicating said cryogenic fluid between said first connector and a first cryogenic riser having a first end and a second end, said first end of said first riser connected to said first connector, said second end of said first riser located in a body of water and in fluid communication

with said second location, and said first riser adapted to allow the vertical position of said first end of said first riser to be changed; and

d) communicating said cryogenic fluid between said first riser and a pipeline cryogenic fluid conduit having a first end and a second end, said first end of said pipeline conduit in fluid communication with said second end of said first riser, said second end of said pipeline conduit in fluid communication with said second location, and said pipeline conduit at least partially submerged within said body of water.

91. The method of claim 90, wherein said second location includes a facility.
92. The method of claim 91, wherein said cryogenic fluid is communicated from said first floating vessel to said facility.
93. The method of claim 91, wherein said cryogenic fluid is communicated from said facility to said first floating vessel.
94. The method of claim 91, wherein said cryogenic fluid is communicated from said facility to said first floating vessel and back to said facility.
95. The method of claim 93, further including:
 - e) disconnecting said first floating vessel from said first connector; and
 - f) transporting said cryogenic fluid over said body of water on said first floating vessel to a third location.
96. The method of claim 95, further including:
 - g) vaporizing said cryogenic fluid to a gas.